

SMITH (S. H.)

SOME REMARKS
ON
MEDICINAL MINERAL WATERS,
NATURAL AND ARTIFICIAL;
THEIR EFFICACY IN THE TREATMENT OF
CHRONIC DISEASES,
AND
Rules for their Employment,

ESPECIALLY THOSE OF

CARLSBAD, EMS, KISSINGEN, MARIENBAD, PYRMONT, PULLNA,
SEIDSCHUTZ AND HEILBRUNN.

BY S. HANBURY SMITH, M. D.

HAMILTON, OHIO.
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P R E F A C E .

It is difficult to conceive why an art so useful to humanity as the re-construction in the chemist's laboratory of such well known valuable medicinal agents as the more celebrated mineral waters, should not as yet have been even commenced in the United States. It is the more remarkable, as it is an art first taught practically by Berzelius, who, as correctly stated in Prof. H. Rose's masterly account of his life and labors, delivered before the Academy of Sciences of Berlin, established the first manufactory of such waters at Stockholm, a manufactory still carried on by his pupil and successor, Prof. Mosander. Soon afterwards Struve took up the same subject, and more than thirty years ago, commenced those successful labors, which have conferred so much lustre on his name. By the efforts of later chemists, especially Soubeiran, Anglada, Barruel, Savaresse, and Stevenaux, it has been developed with a most satisfactory rapidity and success. With regard to the perfection which they may be imitated, Dr. Granville observes, "Dr. Struve's imitations of them (Pullna, Saldschütz, and Seidlitz) may be taken with the fullest confidence, as identical in their effects with the natural waters." *** "Struve's imitation of it (Kissingen), which is to be obtained from the German Spa at Brighton, is found to be equally good and efficacious, and the quantity drunk both at Brighton and in London, I have been informed by M. Schweitzer, has been prodigious."—*Dr. Granville's Spas of Germany*, 2d edition, 1839, pp, 321 and 385.

It were easy to offer a large amount of evidence of the same character, given by the most distinguished physicians in Europe.

One can hardly take up a pamphlet written in praise of any particular spa, without finding in it absurd declamations about the more intimate alliance of the chemical elements with each other and with their common solvent water, in medicinal

springs, than it is possible to bring about in the laboratory; and that, therefore, these natural productions cannot be successfully imitated. But every tyro in chemistry knows that the chemical components of a mineral water are united with each other in certain definite proportions, and no other, according to immutable laws now well understood. Chemical analysis is capable of detecting the minutest portion of an ingredient in gallons of its solution; and therefore the quantity of each element being given, the proportions in which bodies combine known, and due regard had to the influence of temperature, pressure, quantity, and order of solution, it is evidently as practicable to reproduce exactly the compound solution called a mineral water, as it is to reproduce exactly Glauber's or Epsom salt, or sal-ammoniac, by a mixture of their ingredients in due proportion and in a proper manner—a thing which is every day accomplished on the largest manufacturing scale—although the processes required are delicate and difficult, and require greater accuracy and care than perhaps any known in the whole range of the chemical arts.

There are some again who entertain the superstitious notion that mineral waters possess some mysterious attribute, agency, spirit, or ingredient, not to be detected by chemical analysis, even the most searching and exact; and to this something they attribute the truly wonderful healing powers of some waters, especially such as contain but a small proportionate amount of salts in solution. Such views are entirely visionary, and, together with the sneers of interested persons, and all other objections whatsoever which have been or may be brought against *properly prepared* artificial mineral waters, are met by the now well established fact, that neither in physical nor in medicinal properties can they be distinguished from the natural. They have the same smell, taste, color, and temperature; by analysis yield the same results; and thirty years' experience, in countries where the art of healing and the successful cultivation of the medical sciences are unsurpassed, if equaled, has proved beyond all further cavil that the artificial perfectly resemble the natural waters, both in the direct re-

sults their use produces, and also in their after effects; and that they cure the same diseases as quickly, as perfectly, and as lastingly as their prototypes.

These waters are drunk directly out of the apparatus in which they are made, each at the proper temperature, pressure of gas, &c., and those cold waters whose composition will admit of it, are also sold in bottles. Not all will admit of bottling, the different taste and effects of many of the waters of the natural springs, after being a short time in bottle, are notorious. But by taking certain precautions, it is in many instances possible to produce an artificial water that shall bear bottling and transportation far better than the natural. This is a matter of common experience in Europe with regard to several, and especially to Selters water, of which one million two hundred thousand flasks are annually sold by the Duke of Nassau direct from the springs. Probably a much larger quantity is sold direct from the laboratory, for few persons would prefer the genuine, half-rotten or flat, to the artificial fresh and sparkling.

Says Dr. Granville:* "The introduction of artificial mineral waters into the practice of medicine, as prepared by Struve, has now received the sanction of several years' experience. In speaking of that scientific physician and chemist, in my account of the capital of Saxony, which he inhabits, I stated, in 1828, that much was to be expected from the result of his labors,—the benefit of which was about to be extended to England, by the formation of an establishment at Brighton, which has since received the name of 'The German Spa.' The realization of those anticipations has been most complete; and nothing could be more satisfactory than the investigation of the value and importance of that establishment, which took place before the Privy Council in November, 1836; when Lord Lyndhurst and Lord Brougham, who had examined the writer of these pages at great length, respecting the novelty as well

—*The Spas of Germany. By A. B. GRANVILLE, M. D., F. R. S., Knight of the Order of the Crown of Wurtemberg and of the Royal Order of St. Michael of Bavaria; member of the principal literary and scientific societies in Europe; author of "St. Petersburg," &c. &c.

as utility of Struve's process, decided, on his evidence, that the institution was deserving of the enlargement of the time of the patent, to the full extent of the original grant.

"Into the merits of the mode of preparing the artificial mineral waters, (which is due to the sagacity, penetration, and chemical skill of Struve,) it is not my purpose to enter at present. I alluded to his process in a former work, and shall probably have occasion, at some future opportunity, to give a fuller account and description of it. Neither is it my intention to say a word in praise of the establishment of Brighton; although, as a 'German Spa,' I might very fairly have pressed it into my service. That establishment is prosperous, and from four to five hundred patients of note find yearly at it a pleasant and easy mode of recovering their health. I have myself used and prescribed largely, and with great success, the several waters prepared at that establishment; and the time will come when some of those mineral waters will take the place of the perpetual drugging so injuriously prevalent in London.

"The artificial waters in question are found to contain all the qualities and properties, in the most minute degree, of their corresponding mineral springs, as well in regard to the effect which they produce on the human body, as in their chemical composition, taste, and intensity of union. To produce *all* the effects of the real or natural mineral water, of which they are the closest imitation possible, they only need the auxiliaries to which I have so often referred in the present volume, and which are so eminently calculated to facilitate and hasten the recovery of patients. The testimony of the most celebrated physicians in Germany,—at the head of which I may place Kreysig, Clarus, Ammon, and many more,—strongly corroborates my opinion of those waters; and I was happy to find, during my last visit to Germany, that that opinion has been and is gaining ground all over that country."

Laboratories are now in active operation all over Europe, at Paris, Berlin, Dresden, Konigsburg, Leipzig, Doberan, Moscow, St. Petersburg, Warsaw, Stockholm, Gottenburg, Copen-

hagen, Brighton, &c., and especially at the more celebrated springs and baths. It may be important to bathe in the thermal waters of Weisbaden or Toeplitz for example, while drinking the waters of some spring a thousand miles off. The laboratory supplies the want.

But on the simple score of cost, the benefits derived from the practical application of chemical science are as great in a healing point of view, as they are in the economical arts of every day life. While very large numbers of people are deterred by the expense and bustle from visiting the more fashionable Spas to regain lost health, the necessary outlay is reduced by the new art, to a sum within reach of almost every one.

The writer, well known to the profession in the United States, long the pupil and friend of Berzelius, and for ten years physician to and director of a similar institution in Stockholm, Sweden, has been induced to superintend an establishment for the manufacture of the medicinal mineral waters gotten up by some public-spirited individuals of this place. The most important waters—those applicable to the cure of the largest range of diseases, will be first supplied. Any others found desirable will afterwards be added to the list, whether European or American; as Saratoga, Harrodsburg, or any that have been submitted to a reliable analysis, or whose popularity may make it advisable to undertake such analysis with a view to re-composition. The establishment will always be open to the inspection of respectable physicians, and every information afforded. Such waters as admit of bottling, as Kissingen, Marienbad, Pullna, Seydschutz, Pyrmont, Selters &c., will be prepared and put up for sale in the usual manner, as soon as practicable; and due notice of the fact be given to the profession.

All laudatory remarks in the following pages are from authorities of the highest character on this subject, for reasons which will be understood and appreciated by all honorable and high-minded physicians.

HAMILTON, BUTLER COUNTY, OHIO, APRIL, 1855.

CHAPTER I.

GENERAL REMARKS ON MINERAL WATERS.*

“WHATEVER may be the difference of opinion among continental practitioners on other points of medical practice, almost all agree in acknowledging that natural mineral waters, “God’s own compositions,” as Paracelsus termed them, are the remedies best calculated for the cure and relief of a great number of chronic diseases, and as such they have been employed from the earliest periods. The frequent allusion to them in ancient writings, the remains of magnificent structures found at several thermal springs, and the traditional accounts which have been transmitted down to the present time, afford evidence of the high estimation in which they were held. By the pagans they were considered to be direct gifts from the gods for the benefit of mankind, and their operation on the human body has been ascribed by many to occult and mysterious properties, somewhat approaching to the miraculous, an idea which is still entertained by some individuals, notwithstanding the progress of science has demonstrated that their action is referable to the ordinary principles of therapeutics, though it must be confessed that our knowledge of the mode of action of medical agents still remains enveloped in great obscurity.

—*The Baths of Germany, considered with reference to their remedial efficacy in chronic diseases: with an appendix, on the cold water cure. By EDWIN LEE, Esq. Fellow of the Royal Medico-Chirurgical Society; corresponding and honorary member of the principal continental medical and surgical societies; author of the mineral springs of England; the Jacksonian Prize Essay on the operations for stone; a treatise on some nervous disorders, &c.

“Some persons, however, ascribe the benefit from a visit to a mineral spring, entirely to the journey, the mental relaxation and freedom from the cares of avocation, the exercise in the open air, &c. That many invalids would derive great advantage from the mere change of air, scene, and mode of life, is unquestionable; and it is equally true, that without these important auxiliaries the beneficial effects would not be produced in many instances; yet there is no doubt that, in the majority of cases, the benefit is mainly to be attributed to the medicinal operation of the water, which, though slow, and often not productive of immediate and active effects, is, on that very account, more suited to the class of chronic complaints, in which mineral waters are usually employed. It must also be borne in mind, that in several of the worst cases, in those who resort to mineral springs for relief, these auxiliary circumstances can have no influence, and the benefit obtained is clearly to be ascribed to the waters alone. Many persons are unable to take exercise, care little about the beauties of scenery, take no interest in public amusements, soon become tired, and experience discomfort at being separated from their homes and friends, and are induced to subject themselves to the inconveniences of a long journey to a mineral spring, by the expectation of the benefit which they know they are likely to derive from it. How many persons have I known crippled and almost confined to their room, suffering from pain, without society or resources for amusement, whose spirits have been greatly depressed on account of their condition, and the inconvenience of a residence in a crowded hotel or bath-house, and notwithstanding, a short time after using the baths have experienced a sensible amelioration, and have ultimately recovered, though they had previously tried other means of relief without success. These are the cases by which the powers of mineral water may be satisfactorily tested. Many persons, again, engaged in business, soon experience at a bath the influence of ennui, are disinclined to form new acquaintances, and are anxious respecting the course of their affairs, and yet are induced to prolong their stay from the evident improve-

ment in their health during the course, though perhaps little or no alteration is made in their ordinary time of rising, or in their diet. Such persons, where a course of bathing is not required, will often derive as much benefit from drinking an artificial mineral water, which may also be recommended as an efficient substitute, when a person cannot undertake a long journey, or if he reside near an establishment of mineral waters, and is desirous not to absent himself from his family and his avocations.

“Several highly efficacious springs have been discovered from the circumstances of diseased animals instinctively resorting to them, and recovering their health by bathing in, or drinking the water. Alibert says, “It is a known fact, that Vichy, in the month of April, at the period when the snow melts upon the mountains, when the wind has passed over the springs from the direction of Puy de Dome, and has carried the vapour to distances more or less considerable, the ruminating animals on the left bank of the Allier, swim across the river to come and drink with avidity at the salutary springs of the establishment; the waters are then fit for use, and the people of the country are in the habit of saying, the season has commenced, the beasts have come across, *les bêtes ont passé*. The peasantry in the neighborhood of mineral springs have been for centuries in the habit of using them, in those cases which experience had taught them were likely to be relieved. Some invalids derive no benefit from one mineral spring, yet are greatly advantaged on using another more suited to the nature of their disease; though the mode of life be the same in both places. Notwithstanding the inferiority of exported waters to those at the springs, they are often eminently serviceable, although the invalids, instead of breathing the pure air of the country, and rising early in the morning to take exercise, continue to breathe the vitiated air of a metropolis, lie in bed during the great part of the morning, and take no exercise except in a carriage; in short, make no change in their usual mode of living. The power of mineral springs is further proved by their prejudicial effects when used in cases to

which they are not adapted, and also when incautiously employed by persons in health.

“Other examples might be adduced, if it were necessary, to show that mineral waters are powerful means in the removal and mitigation of chronic disease, which require great caution in their administration, and should be employed not as a last resource, and when a disease has become inveterate, as is too often the case; but as therapeutical agents better suited to the treatment of many chronic diseases than pharmaceutical preparations, inasmuch as in these cases, active medication frequently does harm, and the good effects of the treatment are generally more durable, in proportion as they are gradually produced. “The evidence of antiquity,” says a standard author, “with regard to the efficacy of mineral waters, the experience of centuries which confirms this efficacy, the universal favour in which they are held among all civilized people, notwithstanding the difference of medical theories, sufficiently demonstrate that they are of all remedies, those of which the reputation is the most justly established. Nature bestows these remedies liberally upon us, in order to invite us to have recourse to them more frequently in our diseases. She has consulted as much as possible our delicacy, our taste; she has tempered the virtues of the waters, and their energy, and she has adapted them to different temperaments. We obtain many medicaments from plants and minerals, but they almost all require certain pharmaceutical preparations, whereas mineral waters are remedies which are always at our disposal; they contain sulphur, carbonic acid, and neutral salts, which are frequently employed in the practice of medicine. Why, when found in Nature’s laboratory, should these substances not have an equal power as when taken from that of the apothecary? Most mineral waters are not harmless; one cannot use them with impunity in cases where they are counter-indicated, and every year persons become the victims of their imprudence in this respect. So far from being inert, mineral waters are at times so active, that we are obliged to moderate their energy, by mixing them with milk, or some other emollient

fluid.”* Others, however, far from regarding mineral waters as substances possessing but little remedial efficacy, are apt to entertain wrong notions of their powers, and frequently use them in cases to which they are ill adapted; or, trusting entirely to them neglect to make the necessary alteration in their habits and regimen, and to adopt other means of promoting their efficacy. Under such circumstances, it is not surprising that disappointment should ensue, and that these persons should frequently leave watering-places in a worse state of health than on their arrival.

“The very free use which the English and Americans are in habit of making of active medicines, which stimulate particular organs, renders many people unable to comprehend that the *modus operandi* of mineral waters differs from that of pharmaceutical preparations; the action of the former should be general and alterative, and their sensible effects are often subordinate, and frequently not apparent till a person has been using the water for some time. ‘We should, however, be greatly in the wrong,’ says Dr. Kreysig,† ‘if we were to consider in all cases the increase of the intestinal, urinary, or cutaneous secretions as critical, and as the sole or chief effects of the waters, for this is often a circumstance of very subordinate importance, and only constitutes the most superficial effect, although the quickest and the most apparent. The Carlsbad waters frequently cure the most obstinate obstructions and enlargements, without occasioning any notable evacuations.’ But in most pharmaceutical preparations, the action is of a local nature, affecting principally a particular part or parts, and is speedily followed by sensible effects: hence, many of those who have been accustomed to this mode of medication, are with difficulty induced to go through a regular course, or cure, as the Germans call it; and finding no material alteration in their state at the expiration of a few days, or a fortnight, not unfrequently abruptly break off, either to re-

—*Palissier et Buitron-Charlard, Manuel des Eaux Minerales. Paris 2nd edition.

†De l’usage des Eaux Minerales de Leipsic. 1829.

turn homewards, or to go to some other place, and report that they used such or such waters, without finding themselves a bit the better; others, though they may have regularly used the waters for a longer period, yet acting upon their own responsibility, or without being attended by a properly qualified professional adviser to superintend their course, and make such alterations as circumstances may require, frequently adopt improper methods of employing it, and are disappointed in the results when it may be that the blame rests entirely with themselves.

“In general,” says a French author, ‘mineral waters are not suited to acute diseases; the rapid course of these affections requires prompt and active measures. The case is different with respect to chronic diseases, the treatment of which succeeds so much the better in proportion as the medication is milder and more gradual. Mineral waters employed at the source are unquestionably the best of all the remedial means for producing this medication. They act in some cases by modifying the state of the humours, as the Vichy waters, in other instances, by imparting to chronic diseases a slightly acute state, which rouses the torpid organs, increases the secretions, and promotes salutary crises. When this excitation is slow and moderate, it relieves and cures obstinate diseases; but when too energetic, it exasperates them, re-kindles latent inflammations, and hastens the course of organic alterations. It is, then, in the maintaining this excitation within proper bounds, in graduating, in regulating the dose, so to speak, according to the nature and the degree of the morbid lesion and the temperament of the patient, that the talent of the bath-physician consists.’*

“Other persons, though employing the waters in a proper manner, are yet so much under the influence of habit, that they do not make the requisite alteration in their diet and mode of living, but pursue the same system, which perhaps tend to produce and to keep up their disorder. A German writer on mineral waters has said, ‘Whosoever comes to a

*Manuel des Eaux Minerales.

bath and desires to be cured must will it in earnest;’ and it behoves every invalid who wishes to give a mineral spring a fair chance, to bear constantly in mind the object which has brought him to it, without being led to act improperly from the influence of habit and example, or from a misplaced economy.

“Many chronic complaints, especially when not of long standing, would be better treated by medicines than by mineral waters, which I by no means wish to be considered as remedies of universal application, and which, in many instances, would be altogether inapplicable, but, on the other hand, there are many diseases of a long duration, in which medicine has been but of little avail, and which a properly directed course of mineral waters would often remove when other means would not succeed. This resource is, however, too frequently delayed till the last, the patient having gone through a whole range of pharmaceutical preparations and the chances of advantage from mineral waters is much diminished. Patisser observes on this point, “The patients who go to mineral springs, have often exhausted all the resources of pharmacy, their stomach is weakened by the drugs with which it has been oppressed, and the cessation from this medication is not perhaps the least of the advantages which they derive from a visit to the springs.’

“The mineralizing substances contained in medical springs, consist of the fixed or solid, and the volatile or gaseous. Among the fixed substances, are alkaline and earthy bases, in combination with acids, forming sulphates, muriates, and carbonates. Some metals, as iron and manganese, and silex, are those most frequently met with. The volatile principles are for the most part carbonic acid, sulphuretted hydrogen, and azote. The quantity and forms of combination of these substances vary exceedingly, and the therapeutical action of a mineral spring, is frequently not of the kind which an investigation of its chemical composition would lead one to suppose. It is well known by those who have paid any attention to the subject, that in a chalybeate spring, for instance, possessing

strongly-marked tonic properties, and where the presence of iron is evident to the taste and sight, the chemical analysis exhibits in most instances, no more than half or three quarters of a grain of this metal to the pint of water. An author whom I have already quoted, says on this point: 'It is evident to us that the medicinal action of natural mineral waters is not always in relation with what we know of their constitutional principles; it is not a few grains more or less of mineralizing salts which determine the salutary effect of mineral waters; chemistry teaches us to characterise, to class the waters; shows us the analogies which exist between them, enables us to anticipate some of their properties, by showing us the predominating mineralizing substances; but it belongs to clinical observation, to the authority of multiplied facts, to determine their therapeutical action.'* Dr. Gairdner likewise says on this part of the subject: 'In judging of the effects of a mineral water, it is important to discriminate what portion of these are to be ascribed to the mere water itself, what to its elevated temperature in the case of thermal waters, and what to its foreign ingredients. The simple circumstance of dilution will certainly facilitate the operation of matters which might otherwise pass, little changed through the alimentary canal; and from the extremely minute state of division in which the active particles are presented to the sentient mouths of the capillary absorbents, it is more than probable that they are directly absorbed into the circulating mass. Indeed, in no other way can we account for the powerful effects which result from the use of many chalybeate springs. The strongest does not contain more than five grains of carbonate of iron to the gallon of water; the real quantity of this tonic received at a single dose into the stomach, or contained in a pint of water, must therefore be extremely small, and nevertheless it will exert a more salutary influence upon the system than twenty times the dose of the artificial carbonate in our ordinary prescriptions.'†

* Patisser, *Manuel des Eaux Minérales*, 2nd edition.

† On the Natural History, &c. of Mineral and Thermal Springs. Edinburgh, 1832.

“Much of the efficacy of mineral springs depends upon the state of intimate combination of the saline, metallic and gaseous substances with the water. Daily experience in the practice of medicine demonstrates that the properties of remedial agents are frequently enhanced by pharmaceutical combination, and the difficulty of combining these substances as closely as they are found to be in a state of nature, is one reason of the superiority of mineral waters. The state of dilution (which I have already alluded to) in which the various particles are held in mineral waters, must also materially influence their operation, and produce effects different from those which would be obtained by the same substances, if exhibited in a more concentrated form. The great variety in the temperature of mineral waters, from 8° or 10° to 60° of Reaumur's scale renders them adapted to various and opposite indications, according as a more relaxing and solvent, or as a tonic and bracing, action is required.

“Mineral waters are then to be considered as strictly alterative remedies, and though their primary operation is mostly evidenced by increased activity of the secretory functions, yet in many instances no immediate effects are perceptible by the patients, and in these cases more benefit sometimes results from their use than in others where their operation is more sensibly felt at the time. Some produce their effects independently of any increase of secretion. Such are chalybeate and some alkaline waters. During the employment of some others, various unpleasant symptoms, or what is called the Bath-fever, are not unfrequently induced.

“Again, other patients experience no alteration in their symptoms, neither during nor immediately after the treatment. The waters appear to have been without any action on them. Such persons should be subjected, during the winter, to a treatment by medicines which have an analogous operation to the waters. The cure is frequently obtained in this manner, or, at least, it is prepared for the next season; when, on resuming the use of ~~the~~ same waters, they are observed to produce a speedy effect, and cure as if by enchantment.’ Min.

eral waters," says Dr. Von Ammon, 'can only produce their beneficial effects in a slow and gradual manner: a hurried perturbatory employment of them not only prevents the cure, but almost always causes an aggravation of the disease; they are drank in order to become mixed with the blood, by means of the digestive powers, and in this manner the curative changes in the body are effected.

"Cold waters are digested slower, and their operation on the vascular system is less penetrating than warm ones. Hence critical signs are much more frequently induced by the use of the latter than the former.

"The beneficial effects of a course of mineral waters is not always evident at the time. But the after-operation (*Nachwirkung*) of mineral water is not a fallacy, but a truth proved by repeated experience. Many diseases are too ancient and deeply-rooted for a cure to be effected by a month or six weeks' course; and though an aggravation rather than an amelioration of the complaint, is occasionally experienced at the time, yet the patient frequently feels himself benefited by the after-operation.*

"A course of mineral waters, or cure, as it is termed in Germany, generally lasts from four to six weeks; in many cases, however, a shorter, as from two to three weeks, is recommended. In other instances a much longer course is required, or even two courses during the season, two or three weeks intervening between them. During this period, patients for the most part drink the water daily; the quantity being gradually increased according to circumstances, towards the termination of the course gradually decreased. The water should always be drunk early in the morning at the spring, when possible, gentle walking exercise being taken at the time. In some instances, it is diluted with milk, or some other simple fluid. It is also advisable in many cases to drink a little of the water in the afternoon. As other medicines mostly interfere with the operation of mineral waters, they should be abstained from, unless recommended by the physician.

**Brunnen Diatetik*. 4th edition.

“It likewise not unfrequently happens, that what is called an *after cure*, by a different kind of mineral water or of other means, is required. Thus, to relieve the state of relaxation and oppression which these other springs sometimes occasion, the subsequent employment of a cold saline or chalybeate is advisable. Patients, after having undergone a course of Weisbaden or Ems, are often sent to Schwalbach, or Schlangenbad, to use those waters; and after a course at Carlsbad, to Marienbad, Franzensbad, or Teplitz. Much judgment on the part of the physician is required, in order to determine justly when an after-cure should be recommended, as the inconveniences sometimes complained of after the employment of an active springs, are often of very temporary duration, and are the prelude to the occurrence of critical appearances, and of a favourable change, which might be prevented by the exhibition of a water of a totally different character; and even those cases when a chalybeate, for instance, is indicated after a course of hot saline or alkaline waters, a period of ten days or a fortnight should intervene before the change be made. In many persons the suspension of the course, and change of air for a few days, suffices to remove the oppression which is sometimes induced at an early period, and before the system has become sufficiently saturated with the water. It is likewise essential after a course of mineral waters, that invalids should not consider that caution is no longer requisite; many have prevented the good effects of the course, by returning too soon to the worry of affairs, or to an improper regimen, or by hurried traveling homewards.”

CHAPTER II.

In the following remarks on the special indications for the use of certain mineral waters, I shall continue to extract or translate from authors of repute, all of them so far as is known or so far as a judgment can be formed, wholly disinterested, and of acknowledged professional standing.

With regard to the first in order and importance, Carlsbad in Bohemia, not less than one hundred and ninety-eight works have been published on the place and its springs up to 1836 inclusive; but not one of these in English. I shall commence with an extract from the work of Dr. Granville already mentioned. "The maladies for the cure of which Carlsbad has been long celebrated, are many. Hufeland, one of the most illustrious practitioners in Germany, who died a few years ago at Berlin, full of years and reputation, being asked by me, during my first visit to that capital, for the reason of this undiminished celebrity of Carlsbad, answered, 'C'est qu'il guerit des maux rebelles a tout autre moyen curatif.†' There is not a single medical man of eminence in Germany who does not entertain the like opinion.

"It would be out of place in a work like the present, which I purposely design for the general reader, (although even the physician of this country will find more information in it than he can obtain from any other English work on the subject at present extant,) were I to enter into a detailed statement of the disorders for which the waters of Carlsbad have been successfully recommended. It will be sufficient for my purpose to state generally, that those waters exert their principal sanative action, 1st, on all chronic affections which depend on debility of the digestive organs, accompanied by the accumula-

†It is because it cures maladies resisting all other curative means.

tion of improper secretions; 2dly, on all obstructions, particularly of the abdomen, which, as Becher, the oracle of Carlsbad, observes, they resolve and disperse; 3dly, on the acrimony of the blood, which they correct, alter, and evacuate, or derive towards the extremities and the surface of the body; 4thly, on calculous and gravele deposits; 5thly, on many occult and serious disorders, the nature of which is not readily ascertained until after the partial use of the waters, such as *tic douloureux*, spasms, rheumatism, and gout.

"Looking to this general classification alone, it is impossible, even for the most uneducated, not to see at once, that nearly two-thirds of the diseases which man, in his civilized state, is heir to, under a lingering, chronic, and often painful form, may find relief in the use of the waters of this Spa; and the reports of all the medical men who have practiced at Carlsbad, or have sent patients thither, or have, like myself, visited the place for information, are replete with examples illustrative of the truth of this assertion.

"My own experience warrants me in commending the Carlsbad waters in all obstinate cases of induration, tumefaction, tenderness, and sluggish action of the liver; in imperfect or suppressed gout; in paralysis dependent on the stomach and not fullness of blood in the head; in cases of *tic*, and nervous disorders; finally, in obstructions of the glands of the mesentery, and in those engorgements of the spleen, and distended state of the splenic vessels, which are much more common (as I have proved in another publication) in females, especially of the better classes, than medical men appear to be aware of. Physicians in this country, now-a-days, seem to have forgotten that such an organ as the spleen exists. They have directed the whole force of their batteries against a larger and more important organ, the liver; every sin and iniquity being

*I strongly recommend the reader to procure and peruse a clear and simple narrative of a recovery from *tic douloureux*, drawn up and published by the sufferer, the Rev. C. B. Hutchinson, vicar of Flete in Sussex—in which the contrast between the impotent farrago of every drug under the sun, and the successful agency of the Carlsbad water, in curing that disease, is strongly marked through the mere statement of facts. Art may indeed blush after this.

laid at its door. This view may, to a certain extent, be just with regard to male patients, who,—from a greater and more frequent exposure to all the morbid causes that can affect the liver—such as vicissitudes of climate, excessive gluttony, and high living, immoderate potation of strong liquors, violent exercise of the body, intense thought, and violent mental excitement (as was the case with that illustrious victim of diplomacy, whose name will never perish)—present too often the most afflicting picture of hepatic disorder. But it is not less true, also, that in female patients the spleen is oftener affected than the liver with obstruction and enlargement, for reasons that are equally peculiar to the constitution and the habits of their sex. This distinction is of the utmost importance, and in the course of twenty years' practice in this metropolis, during which period some thousands of cases of female complaints have come under my notice, that distinction forced itself, as it were, on my attention, and I had reason to be thankful that I never after lost sight of it.

“Well, then, these very obstructions of the spleen are essentially benefited at Carlsbad; sometimes by the warmer, at other times by the less warm springs; according to the degree, intensity, and peculiar cause of the indisposition. Being aware of this fact, I never hesitated sending those of my patients who could afford it, to Carlsbad, where they have all found that relief which drugging had never given to them in London. In saying this, however, I do not mean to insinuate that no other warm mineral springs than those of Carlsbad will be found equally useful in the same class of complaints. The contrary is the case, as may and will be seen in other parts of this work.

“The power of the *Sprudel*, in dissipating adhesions, has been mentioned with confidence by some physicians. The testimony given me of this fact by one of the patients on the spot, would seem to corroborate the statement.

“It is the despondent, dejected, misanthropic, fidgety, pusillanimous, irritable, outrageous, morose, sulky, weak-minded, whimsical, and often despairing hypochondriac,—for he is all

these, and each in turn,—made so by continued indigestion, by obstinate and unremitting gout, by affections of the nerves of sympathy and of the gastric region, and by other equally active causes,—that Carlsbad seems pre-eminently to favor.

“Closely allied to this class of disorder is the formation of biliary concretions. Innumerable cases of this sort have been recorded as cured at Carlsbad; and I am acquainted with an eminent foreign physician, whose case I alluded to in my work on St. Petersburg, who owes to Carlsbad the complete recovery from one of the most inveterate affections of this sort that man can suffer under and live. With respect to gravelly and calculous depositions, the single case of Dr. Bigel of Warsaw forms the strongest evidence of the great efficacy of the Carlsbad waters in such complaints. That gentleman, after having submitted at Berlin to the new operation of lithotripsy, on account of a large calculus in the bladder, of which he was suffering, at the age of sixty-four, was obliged to have recourse to the waters of Carlsbad, which smoothed, diminished, and lastly expelled from time to time, all the remaining fragments of the stone, until he quite recovered. I have already alluded to another case of recovery from gravel in the person of an equally eminent physician, Joseph Frank.

“Neither nausea, nor vomiting,—no unpleasant symptom, excepting a few eructations, is ever produced by the Carlsbad water. Its taste I have already mentioned. Once arrived in the stomach, it produces an exhilarating sensation, which spreads itself to the intestinal canal generally. The latter, after the full ingestion of the prescribed quantity, becomes in many individuals distended with wind, and sometimes affected; but purgation does not always follow the use of the water.

“Copious secretions of the kidneys, and perspiration, are much more frequent effects of drinking the Carlsbad water than purgation; and it is curious that the salts of that water are detected in both those excretions. Some drops of the perspiration produced after drinking the *Sprudel*, when examined by the microscope, exhibited crystals of those salts.

"One of the inconveniences more or less common to all mineral waters when taken internally—*borborigans*, or rumbling in the intestines, particularly if the patient has foolishly eaten of vegetables—is not so frequently with the Carlsbad water. My appetite was sharpened after the several goblets I had swallowed, without any consequent distention. On one or two occasions I fancied I felt the beating of the vessels of the head more loudly; and the action of the heart was certainly disturbed.

"Altogether, the immediate effects of the Carlsbad water show its potency, and warn patients from attempting to use it, either under the advice of physicians personally unacquainted with its nature, or without any advice at all."

I shall next extract a few lines from Lee's "Mineral Springs of the continent of Europe."

"From the powerful effects on the mucous membranes, absorbent system, and parenchymatous viscera, the waters of Carlsbad are highly efficacious in the removal or mitigation of abdominal engorgements; induration of the liver or spleen following acute disease; hypochondriasis with constipation; piles; menorrhagia, and other derangements of the uterine secretion not of an inflammatory nature; enlargement of the lymphatic and salivary glands; chronic gout, when accompanied by much stomach and liver disorder; long-standing disease of the kidneys, with tendency to the formation of stone; some cutaneous affections, especially when of syphilitic or mercurial origin; enlargement and chronic disease of joints. They are contra-indicated in persons of a full habit of body, and those liable to cerebral congestion, unless these states have been in some measure removed, previously, by preparatory treatment; in cases of structural disorganization, as consumption, acute gout with calcareous deposits; hemorrhage, epilepsy, and other convulsive diseases."

Taking up next in order the work of Dr. James Johnson,† we find in the preface the following:

"As far as the Spas are concerned, Dr. Granville's work is full of information on this subject. The profession and the

public, indeed are deeply indebted to Dr. Granville and Mr. Edwin Lee for opening out wider and clearer views of the continental mineral waters; but the subject itself, so far from being exhausted, is only in its infancy of investigation. Whether we regard the constituent elements of the waters themselves, their physiological operation, or their remedial efficacy, there is ample room for many future inquirers."

In the work itself Dr. Johnson makes the following quotation: "The operation of the Carlsbad waters, in fact, is what is called '*alterative*,' or '*deobstruent*;' and as such they are applicable to a long list of maladies arising from congestion or obstruction in the abdominal organs, particularly the liver, spleen, mesentery and other glandular viscera, attended by debility of the stomach, heart-burn, acidity, distention, eructations, constipation, jaundice, biliary concretions, hypochondriasis, hæmorrhoids, head-aches, giddiness, gouty feelings, cutaneous eruptions, scrofula, and urinary obstructions."*

"This is an encouraging picture, but I have no reason to consider it as overcharged.

"In chlorotic amenorrhœal disorders, Carlsbad waters are beneficial; not so much from the minute quantity of iron they contain, as from their stimulant and deobstruent qualities. Females ought not to use these waters at all times.

"A painful complaint which often presents itself at Carlsbad is *biliary calculi*. Dr. De C. thinks that the waters are almost specific in such cases. He lately attended an invalid who had come from a great distance to Carlsbad.† On the third day of using the waters a prodigious number of gall-stones, of all sizes, were expelled. He has often found gravel to be expelled from the kidneys and bladder during the use of these waters; but he does not vouch for their *lithontriptic* powers—that is, their power of *dissolving* urinary calculi, although this quality has been attributed to them by some physicians.

†Pilgrimages to the Spas in pursuit of health and recreation; with an inquiry into the comparative merits of different mineral waters: the maladies to which they are applicable, and those in which they are injurious. By JAMES JOHNSON, M. D. physician extr. to the late King.

*Carlsbad; ses Eaux Minerales. Par De Carro.

†A brother-in-law of mine, and sent by me to Carlsbad.

S. H. S.

"Before quitting these celebrated waters, I must take a short notice of a little work just published by a rising young physician of Carlsbad, whose acquaintance I had the pleasure of making there.

(*From the Medico-Chirurgical Review.*)

Geschichte von Karlsbad. Von Dr. Hlawaczek.—History of Carlsbad.

"The learned author gives a most elaborate account of almost every work that has been published on these famous waters, since their discovery by the Emperor Charles IV. in the sixteenth century. His book is, in short, a catalogue raisonnee of the writings of his predecessors. The few practical observations contained in it may be thus stated:

The medicinal powers of the Carlsbad waters are the following:

"1. They invigorate the primæ viæ, and dislodge from them all impurities and accumulations. Hence in various forms of dyspepsia, arising from sedentary life, from torpor of the bowels, &c., they are especially useful; also in chronic jaundice, obstinate head-aches accompanied with constipation, &c.

"With such patients the use of the Carlsbad waters often acts as an emetic for the first day or two.—Corpulent indolent persons, who feed too much and take little exercise, are always benefitted.

"In all obstructed and infarcted states of the abdominal viscera, the use of the Carlsbad waters may be recommended. Hence, in many cases of hypochondriasis and hæmorrhoids, they are beneficial: also in enlargements of the liver, spleen, and mesenteric glands.

"In addition to these maladies, we may enumerate many cases of amenorrhœa and dysmenorrhœa—diseases which are so often dependent upon accumulations in the bowels and general torpor and plethora of the system.

"2. The Carlsbad waters have the effect of freeing the blood of acrimonious particles, either by neutralizing and discharging them out of the body, or by causing a metastasis and derivation of them to the joints or to the skin. Hence in vari-

ous forms of *internal* gout and rheumatism, they are singularly useful; the disease being often drawn from the internal viscus which may happen to be affected to some outward part.

“3. The Carlsbad waters cleanse the urinary passages of calculous deposits.

“And lastly, they often effect a cure in a number of anomalous diseases, whose causes are not known, and to which indeed, a name cannot be given; as, for example, loss of power and feeling in the limbs, a tendency to syncope followed by cramps, some cases of epilepsy and asthma; also in certain disturbances of the mental functions. In these cases, the Carlsbad waters seem to act as an *alterative*.

“The venerable *Hufeland* published in 1815, a treatise on the chief medicinal springs in Germany. He recommends the use of the Carlsbad waters in cases of constipation, tympanites, incipient disorganization of the stomach and bowels and other abdominal viscera, more especially of the liver, of chronic jaundice, of congestion of the mesenteric and portal veins; also in nervous ailments, as amaurosis, hypochondriasis, and in various forms of calculous disease. He also strongly recommends them in most of the forms of gout. The Carlsbad waters, in addition to their purgative qualities, are possessed of remarkable alterative powers, so that often they effect quite a change in the state of the blood and other fluids of the body, depriving them of all acrimonious and hurtful particles, and restoring them to a condition of health. Hence their striking utility in numerous cases of cachexia, which are irremediable by ordinary medical treatment.—HLAWACZEK.”

It may be as well to introduce here some further remarks by Dr. Johnson on the *modus operandi* of mineral waters:

“Many different diseases are produced by the *same causes* acting on different constitutions. Thus luxurious living and idleness will, in one person, induce gout—in a second, hæmorrhoids—in a third, liver complaint—in a fourth, rupture of a blood-vessel in the lungs—in a fifth, congestion of the brain—in a sixth, paralysis—in a seventh, stone in the kidney or bladder,—and the list might be far extended. Now, if the same cause or

class of causes produce such a number of different maladies; there is nothing unreasonable in the supposition that the same remedy, or class of remedies, may be useful in abating or even removing those varied disorders.

“With the exception of a few specific remedies, such as mercury, sulphur, colchicum, and ergot, with the real nature of whose physiological operation on the human frame little is known, almost all the other medicinal agents act through the medium of the digestive organs, the liver, the kidneys, and the skin. Now, the mineral waters of such spas as Wisbaden, Kissingen, Marienbad, Carlsbad, &c. act through these organs also, and contain the elements of many of our most efficient remedies. They have, besides, great advantages over ordinary medicines at home, in consequence of the exercise of traveling, the change of air, and the alteration of habits that precede the course of the waters.

“The far greater number of physical remedies act by altering and improving disordered functions and secretions—by evacuation—by imparting tone to debilitated organs or the whole constitution.

“It must be allowed that mineral waters contain, to a very considerable extent, the requisite ingredients for fulfilling one or all of the foregoing indications.

“It is often found to be beneficial to combine tonics, alteratives, and aperients in the same formula or prescription, in order that the three indications alluded to, may be simultaneously accomplished. It is undeniable that some of the spas contain within themselves this combination of chalybeates, aperients, and alteratives, either of which ingredients can be increased at pleasure on the spot.

“The medicinal agents in the mineral waters, though in much smaller quantities than when given in prescriptions, have a much better chance of success, in consequence of their being so largely diluted by the hand of Nature, and the temperature of the diluent being so very high, in most of the springs.

Lee, in his “Baths of Germany,” observes: “As further proofs of the solvent powers of the Carlsbad waters, it is sta-

ted that during their use encysted tumors have disappeared, nasal polypi have spontaneously fallen off, that bony prominences diminish, and that fractured bones becomes softened at the point of the fracture. Some similar effects have also been observed from the use of the artificial Carlsbad waters in Struve's establishment."

Finally, Dr. A. Vetter, well known in Europe as an author on these subjects in his *Allgemeines Brunnen und Badebuch*, Berlin, 1840, observes, "If further proof is desired that the powerful effects of the Carlsbad waters, depend on the mode in which their elements are combined, we cite the perfectly analogous effects produced by the factitious waters of Struve."

EMS.

Of the waters of Ems, says Dr. Lee in his *Baths of Germany*, "The resident practitioners also speak highly of the effects of these waters in cases of disordered digestive functions, with torpor of the liver; and there is no doubt, that in several of these cases, attended with heartburn, acidity, and other symptoms of a vitiated state of the secretions, they are calculated to be of considerable benefit,—they are also well adapted to some deranged states of the health, occurring in women and children, without any particular organ appearing to be the seat of disease. Dr. Diel, who was bath physician at Ems, for upwards of thirty years, strongly recommended the waters in congested states of the abdominal circulation, with its consequences hemorrhoidal affections, etc., and also in dysmenorrhœa, and some other diseases peculiar to females.

"The Ems waters would be likely to be of great service in irritation of the urinary passages, with deposit of lithic acid, or other gravel; especially where there exists a gouty or calculous diathesis, or when combined with a deranged state of stomach.

"But it is in diseases of the respiratory organs that Ems has acquired the highest reputation; patients with these diseases forming annually a large proportion of its visitors, some of them in such an advanced state of disease as to be little

likely to derive much advantage from any remedial measures. Hufeland, in alluding to the effects of the Ems waters, in this class of diseases, says, 'We know how few mineral springs there are, that can be used with safety in diseases of the lungs; patients with such affections are commonly prohibited from visiting a mineral spring; here the reverse is the case, and, in my opinion, Ems stands alone with Selters in this respect.'* Diel also adds his testimony to their efficacy in these cases, and in certain kinds of asthma.

"Dr. Doring recommends the Ems springs in scrofulous diseases; and in many of these affections I should say, they are likely to produce a great amelioration; especially in delicate children with enlarged mesenteric glands, the water being drank alone, or with milk, and combined or not with bathing, according to circumstances. In several patients with enlarged glands of the neck, and other local affections, from the same constitutional cause, a course of Ems water would be highly serviceable as a preliminary to the employment of a more tonic medication; tonics being very often indicated in these patients, who, however, are frequently not able to bear them, without the previous use of remedies of a more solvent nature.

"In nervous affections of an hysterical nature, Ems is calculated to be of considerable benefit, particularly if there co-exists disorders of the digestive functions, or of the periodical secretion, with irregular distribution of blood, as marked by frequent flushings, cold feet, etc."

From Dr. Granville's work I take the following extract: "Dr. Kreysig, who is a great authority in regard to the Ems waters, states that they have effected remarkable cures; first, in cases of pulmonary complaints; secondly, in general or partial debility of the nerves; thirdly, in certain complaints peculiar to the other sex. I may add, fourthly, that of late years they have been considered as valuable remedial agents in the treatment of indigestion.

"When used in complaints of the chest, it is usual to mix them with a third or fourth part of fresh milk. The treatment

*Practische Uebersicht der vorzuglichsten Heilquellen Deutschlands.

generally lasts six weeks, and the season of the year in which the waters appear to be most effectual, are the months of July and August.

“It would require another volume, were I to enter at all into the consideration of the many disorders—such as gout, rheumatism, scrofula, glandular obstruction, indigestion, sexual disturbances, sterility, &c.—for which the Ems waters have been recommended; or were I even to limit myself to the citation of a few of the many cases that have been treated by those waters under my directions. I will, however, state it as my general opinion of the Ems waters—an opinion founded upon considerable experience, and I might appeal at once to many who will probably read this passage, and who will admit the truth of what I am about to say, and have said to them when they were proceeding to that Spa—that, taken internally, they are what I call ‘disturbing waters;’ not in the way of purgatives, but in the way of *alteratives*, to a degree which is scarcely producible by means of ordinary medicine, and which, although very beneficial to some, is injurious to many, and requires, under any circumstances, great circumspection in the lengthened use of them. So great is the disturbance produced in the system while the waters are drunk, that I am acquainted with very few patients who have got well of their complaints during the treatment, or before they came away from Ems. Of the rest who recovered long after they left the Spa, the major part had judiciously enough been prevailed upon to go and finish their cure at some other place—generally a *cold Spa*.”

The next is from Dr. James Johnson: “Thilenius (the elder and younger) the Nestors of Ems, makes the following observations on the waters.

“They operate on the human constitution mildly but efficiently, with little disturbance to the functions of the body. On this account they agree well with delicate persons, whose nerves are morbidly sensitive,—the sad effects of mental emotions, civilized life, and other debilitating causes. They are, therefore, peculiarly suited to the female constitution.—

They may be employed, too, in advanced stages of disease, where other mineral waters of more exciting qualities, would be inadmissible. Their alkaline properties enable them to resolve obstructions, and free the functions of the kidneys, skin, liver, and various other secreting organs—especially the uterine vessels. They correct tenacious and morbid bile, as well as acidities—and thus prove aperient in a mild degree. Their intimate connexion with carbonic and sulphuretted hydrogen gas enables them to give activity to the secreting vessels, and evacuate unhealthy humours, while they give vigour to the whole organism, oppressed by chronic diseases. They have, at the same time, a soothing and tranquilizing effect on the nervous system. No waters, with the exception of Schlangenbad, produce such a pleasing and salutary operation on the skin, which they cleanse, soften, and leave in a satiny state, thus improving the complexion, and clearing the pores. They are potent in dissolving glandular swellings, and promoting absorption of abnormal deposits.*

“The foregoing exposition of the general effects of the Ems water is more rational, modest, and just, than we shall usually find in the eulogies of most other spa doctors.

“Thilenius, contrary to the custom of most of the spa doctors, admits that; although the waters alone cure many disorders, yet, in a great many cases, appropriate medicines are absolutely necessary. He contends, however, and I believe with justice, that *many diseases give way to the combination of the waters and medicine, which resist the latter, if unaided by the former.*”

PYRMONT.*

“Pyrmont possesses three kinds of mineral springs—chalybeate, saline, and acidulous; but is chiefly frequented on account of the chalybeate ones, especially the Trinkquelle, of which upwards of an hundred thousand flasks are exported an-

*An account of the most frequented watering places on the continent, and of the medicinal application of their mineral springs; with table of analysis, and an appendix on English mineral waters. By EDWIN LEE, Esq. M. R. C. S. author of “observations on continental medical institutions and practice;” “treatise of nervous disorders,” etc.

nally. The water is exceedingly rich in iron and carbonic acid gas, is limpid, very sparkling, of an agreeably acid and somewhat astringent taste, and, on standing, deposits a brownish sediment composed of oxide of iron and manganese; its temperature is 10° R. A few glasses taken in quick succession occasion a sort of temporary intoxication, with a feeling of satisfaction and hilarity. When a certain quantity is drunk it has an aperient effect, and promotes the excretion of urine. It is better supported than most waters of this class; and when it can be procured, merits a decided preference over others, especially in cases of general debility remaining after loss of blood, copious discharges, parturition, or severe illness; in chlorosis, hypochondriasis, hysterical and other nervous affections; diseases of the digestive and urinary apparatus, depending on general or local debility; passive uterine and hemorrhoidal hemorrhage; suppressed or difficult menstruation; leucorrhœa, and sterility from weakness, especially where the generative organs had not acquired their full development previous to marriage."

PULLNA AND SEIDSCHUTZ.

"A glass of the former would produce some action on the bowels in most people, two or three are generally taken in the morning by those who go through a course; its use could not, however, be long continued without weakening the alimentary canal and the constitution. Taken regularly for a short period, it is a very useful means of overcoming habitual constipation; when the desired effect is not produced by a moderate quantity, it would be better to warm the water, and use some of it in an enema instead of increasing the dose. It generally acts without griping, or inconvenience, and may be employed with advantage in some inflammatory and febrile diseases, in which a cooling purgative is required, as also in chronic disorder of the digestive organs induced by too full living and attended with a plethoric condition of the system, a tendency to local congestions, as of the brain, thoracic and abdominal viscera, and hæmorrhoidal vessels. In the tendency to gout and to the

formation of calculous concretions, painful and difficult menstruation in persons of a full habit, and who frequently require aperient medicine, it may be exhibited with advantage, and likewise to children with a full and tumid abdomen; mixed with a little syrup of warm whey.

“The Pullna water is not unfrequently employed preparatory to a course of the saline tonic springs, as Marienbad, Franzensbad, etc.

“According to Dr. Reuss, the Saischutz water in small doses improves the digestion and appetite, and excites the absorbents of the alimentary canal, the iron and soda preventing its action from causing debility. In larger doses it proves purgative, and increases the flow of bile, without too much irritation of the mucous membrane; hence it is highly useful in torpid states of the abdominal circulation and absorption, as a revulsive means, and in diminishing an anormal plasticity of the blood.”†

“By its excessive or too prolonged use, the stomach becomes debilitated, loss of appetite ensues, and diarrhoea, sometimes with an inflammatory condition of the bowels, supervenes. It is applicable to the same kind of cases as the Pullna water, and is often advantageously combined with a course of bathing at one of the thermal springs, especially in cutaneous eruptions, acne, etc., combined with disordered digestion in young and middle-aged persons.”

HEILBRUNN.

“That the Iodated mineral waters of Germany have effected numerous and important cures in a variety of diseases, must be admitted on the testimony of those who have prescribed the remedy, watched its progress, and communicated the result.

“The Adelheid’s Quelle has deservedly ranked highest in this class of springs, and has obtained the notice of some of the most reputed members of the faculty in Germany. The testimony of some of them, in regard to the diseases in which

†Das Saischutz Wasser, chemische untersucht von J. Berzelius, mit Bemerkungen ueber seine Heilkräfte, von Dr. Reuss. Prag, 1840.

it has been found efficacious, I shall transcribe from the work of my friend Dr. Wetzler.

"According to Geiger the Adelheid's Quelle may be prescribed with advantage in the following diseases.

"1st Loss of Appetite and Indigestion.

"2nd Chronic affections of the Liver and Spleen.

"3rd In Ague and Jaundice.

"4th In disease of the Kidneys from Calculous deposits.

"5th In Chlorosis, Affections of the Womb and Sterility.

"6th In Hypochondriasis and Melancholy.

"7th In chronic Erysipelas, cutaneous diseases, as Psora, Porriago, etc.

8th In gouty affections, stiff and enlarged joints, Palsy etc.

"Karl in his work states that the water may be employed with the greatest success in all cutaneous diseases, as Psora, Tetter, Lichen etc.; in contractions of the Limbs from Gout, Rheumatism, or Palsy, in morbid affections of the Bowels, and some particular organs, as the Liver, Spleen, and Mesentery; and in the diseases consequent upon such affections as Jaundice, Ague, incipient Dropsy, White swelling etc.—in calculous affections of the Kidneys, and in certain affections of the Uterus, particularly amenorrhœa, and Sterility.

"The Adelheid's Quelle has also been much employed at Manich, especially in the general Hospital, and that with great success in induration of the glands, Disease of the generative organs in females, ovarian Dropsy etc.

"Dr. Dietrich has for many years been in the habit of prescribing the Adelheid's Quelle with the greatest success in the following diseases, viz. Scrofula, Atonic Gout, Chronic Catarrhal affections, in the latter stages of Gonorrhœa, in secondary symptoms, in schirrous affections, in exudation and hardening of the Cuticle etc.

"The late Dr. Xav. Martin, who was well acquainted with the practical application of the Adelheid's Quelle, states that it is decidedly efficacious in all scrofulous diseases; in Tubercular Phthisis, in induration and schirrous affections of the

bowels and ovarii, in frequent abortion, and in almost all the diseases already mentioned.

"I come now to Dr. Wetzler's classification of the diseases in which the Adelheid's Quelle proves sanative.

"1st In all affections of the mucous membranes, the lymphatic and glandular systems, inactivity in the process of assimilation, Congestion in the *vena portarum*, in Urethral affections, and diseases of the urinary and generative organs.

"2nd In accumulation of mucus in the air passages, protracted Catarrh, etc.

"3rd In cases where a scrofulous or strumous habit is indicated.

"4th In congestion of the bowels, liver, spleen, and pancreas

"5th In sexual maladies especially in the female.

"6th In chronic affections of the Bladder with disposition to calculous or gravelly deposits.

"7th In affections of the nervous system dependent on, or arising from, chronic dyspepsia.

"8th In tendency to acidity in the system, as in Gout, Rheumatism etc.

"All these varieties of diseases Dr. Wetzler illustrates by cases which will come to be noticed in a subsequent chapter.

"The above classification along with those that precede it, though condensed, has been extracted from the works of the various authors whose names are given.

"On a review of this classification it will at once appear that there is little discrepancy in the enumeration of diseases; all are agreed in regard to the efficacy of the water in Scrofula, Glandular affections, cutaneous diseases, whether simple or complicated; in short in all maladies in which Iodine is indicated."*

From Lee's work is taken this extract: "The combination of stimulating, solvent, and tonic powers of the Ragozzi, renders it most suited to relieve those states of disease; connected with, or dependent on, abdominal plethora, liver congestion,

*The Iodated waters of Heilbrunn, by Sir ALEXANDER MACKENZIE DOWDIE, M. D. &c. &c.

and obstruction of the circulation of the vena portæ, which chiefly occurs in persons of middle age. A deranged state of stomach and bowels with difficult digestion, or feeling of unusual distension after eating; constipation; piles; a disordered state of the skin with eruptions, especially about the face; painful and irregular menstruation; hypochondriasis; gout, when recent and not occurring in old people; and scrofulous affections of the glands, are among the complaints most likely to be cured or relieved by a course of the Ragozzi water, combined with baths of the Pandur. The same means would be very efficacious in many cases of dyspepsia, arising from excess in the pleasures of the table, or the abuse of ardent spirits, and attended with heartburn, acrid eructations or pyrosis."

The following is from Granville: "According to the testimony of the best authorities—those, I mean, on whose skill, candour, and veracity, one may safely rely—and I will mention at once, besides Siebold, the patriarch Dr. Kreysig, with whom I have conversed at great length on this subject, as well as Dr. Maas and Dr. Balling—the *Ragozi* is, *par excellence*, the remedy against chronic diseases. In acute or febrile disorders its virtues are null. It is not easy to imagine a more happy combination than is found in the *Ragozi*, of gently purgative, depurative, and alterative salts. Judging, *prima facie*, from such a circumstance alone, I should expect the very best effects from the use of the *Ragozi*, in every possible modification of complaints of the stomach,—from the mere want of appetite, and oppression after eating, to the most complicated derangement of the various abdominal processes which constitute digestion. I will only instance, as an example, the nausea and retching (first indications of forthcoming disease) which salute the overnight tippler when he first wakes in the morning. Half a glass of the *Ragozi*, taken immediately on waking, will arrest those symptoms.

"When impurities have collected in the intestines or principal passages, the *Ragozi* removes them with astonishing quickness,—stimulating at the same time, by its proportions of gas, and moderate quantity of steel, the nervous and muscular en-

ergies of the stomach and its dependencies. Dr. Maas asserts that this water is a safer and more certain remedy for *obscipatio intestinorum* than almost any other. The intestinal functions are rendered regular by its use, and their regularity continues after the patient has ceased to drink the water.

"In local fulness of blood in the principal viscera of the abdomen,—the liver, for instance, the spleen, the mesenteric veins, and in cases of incorrect distribution of that fluid to those organs which characterize the female constitution,—the *Ragozi* has acquired great reputation. The last-mentioned circumstance has led practitioners of celebrity to apply it in cases where anomalies exist in that one particular function which is the source of so much suffering to females; and, by a natural induction, in cases also of sterility.

"It becomes me not, as the writer of a work avowedly intended for general readers, to enter into further particulars on a subject which has lately engaged the attention of several practitioners on the continent, and my own. But to have passed wholly unnoticed the circumstance which, perhaps, more than any other, renders this Spa so truly valuable, would have argued either ignorance or neglect. The causes of sterility are various. The larger number of them, which have been well studied by those who have inquired into this question, and into the powers of this mineral spring, are as certainly removed by it as any other obstruction; and, so far, the problem would be one of easy solution. But there are also causes of that singular state of the female constitution which are likely to be aggravated by the *Ragozi*; and, therefore, the question is one that requires deliberation. Dr. Maas and Dr. Kreysig have put me in possession of cases of disordered female constitutions, which, even in a purely medical book, I should forbear quoting, but which, with some similar cases that have fallen under my own knowledge, go to confirm whatever has been said before by Siebold, respecting the virtues of the *Ragozi*.

"There is another class of invalids who derive undoubted benefit from Kissingen waters; and these are your 'hard livers;'—I mean such as have a hard liver, from having lived hard.

Instances were quoted to me, of persons bearing about with them considerable swellings of that organ, which could be felt through the skin, as hard as a stone, but which were softened, diminished, and at last wholly removed, by the dissolvent powers of the *Ragozi*. 'As long,' says Dr. Maas, 'as the reproductive forces are not too far sunk, and no considerable emaciation or insidious fever has shown itself, we have still great hopes of saving the patient by the use of the *Ragozi*.'"

MARIENBAD.

Of the properties of the *Kreutzbrunnen* at this place, Dr. Granville observes: "The medical virtue of the *Kreutzbrunnen* appears particularly conspicuous, in all the varieties of disorders by which the digestive functions are affected, no matter how severe in degree. The testimony of medical men, and of many of the patients themselves, who are, after all, the best witnesses, support the opinion of Dr. Heidler in this point. It is, says he, by the removal of faulty and offensive secretions previously lodging in the intestines, that the *Kreutzbrunnen* not only corrects, but improves, and, lastly restores permanently, the tone of the stomach and the appetite.

"The diuretic power of the *Kreutzbrunnen* is very striking, and from the very first to the last day of using it; nor is the solvent and purgative faculty it possesses less remarkable. Three or four beakers of the water suffice; though in general, double that number is drunk to produce absolute purgation. But I feel convinced that its solvent power would be increased, by being drunk mixed with an equal quantity of hot mineral water. When so taken, I hold the *Kreutzbrunnen* to be an invaluable remedy in all bilious complaints, without requiring the least assistance from mercury.

"On the action of the heart and the pulse this water exerts considerable influence. At first it seems to disturb both; but as soon as its effect on the intestines is established, that disturbance ceases, and a well-being ensues, which is not readily obtained from the daily use of ordinary drugs. This property of the *Kreutzbrunnen* renders it susceptible of application in

cases where either the constitution or the age of the patient admits of no remedy productive of irritation; and, therefore, persons subject to apoplexy even, or such as are threatened with consumption of the lungs, may take the *Kreutzbrunnen*, mixed either with hot mineral water or milk, for the removal of those disorders."

According to Heidler quoted by *Lee*, and praised by both Johnson and Granville, "the use of the *Kreutzbrunnen* is most applicable in those cases, where there is a deranged state of the mucous membrane of the alimentary canal, with collection of mucosities, in cases of obesity, abdominal engorgement and congestion of various organs, from repletion and fulness of the veins; in the nervous affections of both sexes, when connected with a full habit, and in persons accustomed to free living who lead a sedentary life. In such persons, some degree of acceleration of pulse, feverishness, and determination of blood towards the head, are sometimes occasioned; which effects may often be prevented by allowing the water to be exposed for some time to the air before drinking, or by warming it, which allows the escape of the gas; though by these means the tonic properties are impaired, and the operation is rendered more laxative.

"This water is also well adapted to procure the evacuation of gall-stones, and to prevent their formation, as well as that of gravel or stone in the bladder, which so frequently depends upon the above-mentioned causes; here also the diuretic property of the water has a beneficial effect in causing the expulsion of these concretions when formed; though, when a diuretic effect is more especially sought for, the *Ferdinand-brunnen* is to be preferred."

Dr. Johnson also quotes from the work of Herzig, a physician resident at Marienbad, whom he recommends to his countrymen visiting the place: "The water of the Marienbad springs has a soothing effect on the nervous system, and checks vomiting and pain in the stomach and bowels, in consequence partly of the carbonic acid contained in the water, and partly of its property of increasing all the secretions.

"In plethoric persons it often proves stimulating, and causes headache, redness of face, and feelings of cerebral congestion—owing, probably, to the carbonic acid and the iron contained in it.

"Its most marked effect is to increase all the secretions, especially those of the bowels, liver, kidneys and skin—large quantities of mucus are discharged with the stools. The mucous secretions of the bladder, and also of the vagina, are usually much increased at first, but subsequently greatly diminished, when these organs are in a state of weakness. Various forms of cutaneous eruption often make their appearance and rheumatic and gouty pains are usually increased at first, but subsequently disappear during the use of the waters.

"The digestive and nutritive functions are quickened and invigorated, and the patients acquire strength and liveliness, in consequence of the improved state of the intestinal secretions. The Kreuzbrunn waters at Marienbad produce similar effects to those of the Carlsbad and the Kissingen waters; but the former are more purging and evacuant, and act less upon the vascular system, and more upon the digestive functions than they do.

"The diseases in which the Marienbad waters are most useful, are—

"1. All congested states of the *portal* system of veins, indicated by torpid bowels, loss of appetite, hæmorrhoids, and gouty complaints; and the various diseases connected with inactivity of the abdominal circulation, such as hypochondriasis, dyspepsia, morbid sensibility, headache, &c. Numerous cases of chronic rheumatism and gout, which are so frequently associated with congestion of the *vena portæ*, are relieved by the use of the Marienbad waters.

"2. Diseased state of the mucous membranes, such as some obstinate catarrhs, affections of the mucous coat of the bladder, uterus, &c.

"3. Plethora, sanguineous congestions, crampy pains of the limbs, absent or difficult menstruation, and the numerous morbid symptoms dependent upon this state.

"4. Torpor of the bowels and its host of attendant evils.

"By means of its property of increasing all the secretions and excretions of the body, and of bringing out cutaneous eruptions and gouty affections to the limbs, the Kreuzbrunn waters of Marienbad are an excellent remedy in numerous diseases which depend either upon a plethoric state of the abdominal circulation, or upon the accumulation of impurities in the bowels, or upon an unhealthy condition of the mucous membranes. At the same time, they subdue the morbid irritability of the whole system, or of individual parts; they remove congestions, plethora, and various evils dependent upon these. They are especially useful in all cases where Nature herself seems to be striving to induce either an increase of the secretions, or a flow of blood from certain parts, as the nose, anus, &c.

"When the Marienbad waters do not prove sufficiently aperient, a small portion of Glauber or Epsom salts may be added to it. In some cases, the water will agree better, if previously heated; and in others, they are usefully combined with a little warm milk, or with a small portion of wine."

CHAPTER III.

The changes in composition which some of the waters of medicinal springs undergo, either on simply cooling down to an ordinary temperature, or almost invariably when bottled and transported to any distance, or kept any length of time, have lead to the establishment of a new art—that of imitating them.

The progress of science, the accuracy of chemical analysis, the knowledge of the laws of chemical combination, and very much improved machinery and apparatus, have rendered possible the production of an artificial Carlsbad or Ems, Saratoga or White Sulphur, not to be distinguished from the natural production in physical, chemical or medical properties.

These remarks, however, are only applicable to such waters as have been analyzed on the spot, by fully competent chemists, and to such imitations of them as a long and extended

experience has proved to be identical in therapeutic results. It is not pretended that all published analyses of mineral springs are correct; on the contrary, it is well known that many are not made by competent chemists, and are, therefore, not reliable, and some were made at a date so early, that subsequent improvements in knowledge and method have made it desirable that a new examination should be undertaken. But a large number are not in this predicament. They have been analyzed again and again, and the products of the laboratory, compared with the originals, both medically and chemically, so often, and for such a long series of years, as to leave no doubt of their identity in composition. Every day bears witness to their value as curative agents; and of even the less perfect imitations it may be truthfully said, that they have proved to be new medicines, capable of being successfully employed in most chronic diseases, especially such as prove rebellious to ordinary treatment.

These powerful agents, at present almost wholly unknown in the United States, where, indeed, even the natural medicinal mineral waters are used with but little system, and where there is scarcely any literature on the subject, it is proposed to introduce to the notice of the profession in an unpretending way, and on but a small scale. A laboratory is now established in the city of Hamilton, Butler county, Ohio, (easy of access by railroad, from almost all parts,) where, as a beginning, the waters already described are prepared, and are intended to be drunk on the spot, drawn directly from the apparatus, under the same circumstances of temperature, pressure, &c., as at the natural sources. They will be used early in the morning precisely in the same manner as at the springs, and the rules as to diet and regimen will be the same. These rules are of course subject to many exceptions, but on the whole are about as follows.

The medicinal mineral waters are specially indicated in cases of chronic disease, as well as in all those often nameless departures from health or disordered conditions, sooner or later ending in confirmed chronic disease. Such are commonly the

result of a mode of life at variance with Nature's intentions. Intemperance of every description—in quantity of food or drink, whether diluted alcohol, tea or coffee, in tobacco or other narcotic; the use of improper food, or food too highly seasoned; want of occupation or excessive labor, either of body or mind; violent or depressing emotions; want of sleep; living under circumstances of defective ventilation; the effects of certain poisons as the malarial, mercury, arsenic, lead, copper, phosphorus; faulty or insufficient clothing; these are the notorious causes of a host of maladies, most commonly afflicting the wealthy and refined, the members of the learned professions, artists, merchants, statesmen and politicians. But no class can escape entirely; and, in addition to some of those enumerated, the gentler sex is exposed to many other sources of chronic ailment peculiar to it. The first thing then, when using mineral waters, is to abandon all improper habits and to live with the utmost regularity. The best time of the day for drinking the waters is, as a rule, very early in the morning; the last glass should have been taken by eight o'clock. In the morning the body is rested, refreshed and re-invigorated; and the mind is tranquil, the stomach is empty, and the quantity of fluid in the system being diminished, the mineral water is more easily tolerated, digested and absorbed. Not only at this early period of the day, but throughout the whole time devoted to the cure, the dress of the patient demands the closest attention. The customs of fashionable so-called "watering places" are often sufficient to nullify all the good effects which might reasonably be expected from the use of the waters; for, what can surpass the absurdity of coming to the spring in the morning, almost in ball-costume, not to mention the dissipations, the late hours, the match-making, the heart-burning, the excessive crowding, the unwholesome diet which make such watering places anything but temples of Hygiea. During the whole day the dress should be so warm that no risk of taking cold may be run; but the mornings and evenings require particular care in this respect. This rule should especially apply to the clothing of the lower extremities, and neither open-

worked hose nor paper-soled slippers can be worn by those seriously in search of improved health.

The quantity of mineral water to be drank will be determined by the character of the water, the nature of the disease, and the strength of the constitution. The rule is to begin with a smaller quantity and gradually to increase it during a period of four or five days, up to the largest quantity prescribed or tolerated. The maximum is commonly from six to eight beakers of the warm, and from eight to fourteen or even sixteen of the cold waters. The beaker holds about six ounces. It should not be emptied in one hasty draught, but be slowly swallowed like other drinks, especially when using the cold waters; and if heated by exercise these latter should never be taken until the excitement of the circulation is allayed by rest. The first glass should be taken not later than six o'clock in the morning, and the subsequent ones at intervals of about fifteen or twenty minutes, or as often as the stomach is in a condition to dispose of more water. Between each glass gentle exercise in the open air is of considerable importance, in order to cause a more rapid and complete absorption; but nothing is more hurtful than violent exertion, which causes indigestion of the water, sense of weight and giddiness in the head, great perspiration, and, in consequence, often severe colds, general weakness and feeling of fatigue during the rest of the day, as well as the indefinite prolongation of the cure.

There are, however, some persons so exceedingly nervous and debilitated, often in consequence of too luxurious and indolent habits, that they can scarcely bear the pure and refreshing air of the morning; and can by no means digest any considerable quantity of mineral water; but if they attempt it, suffer from dyspepsia, nausea, loss of appetite, pains in the stomach and bowels, constipation or diarrhoea, headache, vertigo, and a general sense of not being well. Such subjects are often unable to continue even the gentlest exercise without frequently stopping to rest. They should immediately on rising take a small cup of coffee without cream, or of weak tea, especially of some herb, as sage, balm, mint or the like, and

should first an hour afterwards drink a half beaker or less of the mineral water every eight or ten minutes. As such persons also do not generally bear the cold waters so well as the warm, if the former, from their composition, are more decidedly indicated, a small portion of some appropriate warm water may be added, as Eger or Carlsbad to Marienbad. By so doing also a portion of the carbonic acid is dissipated, a very desirable thing for those of weak nerves, subject to vertigo or congestion of the brain. Where there is great weakness and irritability—either general or especially in the digestive or respiratory system, or in the case of children, a table-spoonful or two of hot milk may be substituted for the hot mineral water. Finally, if even in this manner the waters cannot be taken in the usual and proper quantity, then, what in the language of the Spas is called the “little cure,” or course, may be tried, often with as remarkable success as is met with in any of the “great cures.” This milder course consists in taking only one or at most two beakers every morning for many months or a year, a course which has often succeeded in curing obstinate diseases acknowledged incurable by any other known means. Having swallowed the last glass, gentle exercise must again be taken for at least one hour, after which may follow a light breakfast of coffee, chocolate, cocoa, broma, tea or meat broth, with cold light bread, dry toast, or crackers, but no butter. It is best to pass the rest of the forenoon in agreeable society, taking a ride in a carriage or on saddle, a good walk or any other not too violent exercise, reading aloud and indulging in good-humored mirth. The forenoon is to the Spa guest the most important part of the day; it is the time during which the water drank in the morning is coursing through the blood-vessels and when the medicinal agents contained in it are brought into the most intimate relation with every portion of the economy. It is therefore eminently wrong to engage in any violent exercise or to suffer any emotion to affect one during that time; to return to one’s accustomed avocations, to strain any particular organs as the eyes, the lungs or the muscles, as such conduct not only prevents the waters working

for good, but often causes them to produce very unpleasant effects. It is of just as much importance to keep *mental* as corporeal diet during the use of mineral waters; for the patient borne down by sorrows, cares and anxieties, in ever present dread of real or imaginary evils, suffering the torments of ungratified passion or the stings of conscience,—if unable to still the troubled waters of the soul, seeks health in vain in those of the Spa.

The best time for dinner is about one o'clock, and a slowly masticated and carefully regulated choice of food is the more important as apparently very trifling errors often damage the chances of cure quite materially, and an indigestion may be followed by most serious consequences. Such errors are apt to produce abdominal plethora with considerable corpulent enlargement, remaining long after the conclusion of the course; and next to moderation as to quantity in everything, it is of importance to partake only of food, both suitable for the individual in health, and not incompatible with the medicine he is taking. With regard to the first, not more should be consumed, even of the most innocent article of diet, than can be digested without any sort of inconvenience; and as to the second, it is but to avoid everything which ever disagrees with the patient, as well as all things allowed by common consent to be "heavy," "strong," "fat," "flatulent," likely to make people "bilious," or to turn "sour on the stomach." It may suffice to name as specimens of "forbidden fruit," cheese, pastry, heavy puddings, warm bread of all descriptions, all sorts of pan or griddle cakes, green fruit, salad, pickles, pork, fresh and salt, salted or smoked meats or fish, highly spiced dishes or sauces, cakes, candy, ice-cream and vinegar.

Most persons using mineral waters become very sleepy after dinner, and should therefore endeavor to keep awake by gentle exercise in the open air or sufficiently exciting society and conversation, for indulgence in a nap is commonly paid for in frightful dreams, oppression on the chest, headache, heaviness of the limbs, low spirits, vertigo, &c., and occasionally even apoplexy has followed. There are, however, exceptional cases

where a short slumber may be permitted, but this must be decided by the "Spa doctor."

The remainder of the day should be devoted to agreeable occupation, music, games, exercise, society; in a word, one should ever bear in mind that health is the object in view, and as that has been lost by a too artificial mode of life, a return to something nearer what may be called a natural mode, is a condition, without the fulfilment of which, the most powerful and properly prescribed medicine may fail of effect.

That the summer months are the proper season for drinking mineral waters will appear very evident on reflecting that exercise in the open air, then so agreeable, is a powerful adjuvant to the physical action of the waters, while the external world, then clothed in its most joyous hues, produces its share of healthful and health-giving influence *on the body through the mind*. Warmth also actually increases the power of the remedy. For, in the first place, the drinking of mineral waters makes the body unusually sensitive, and more susceptible to the impression of cold; in the second, the open, perspirable state of skin produced by warmth of external air, prevents many injurious effects of mineral waters, such as congestion of blood in the head and chest; and in the third, such free action of skin prevents the too violent or exclusive direction of the force of the waters to the kidneys or bowels. These remarks, however, only apply to the so-called "great cure" or course; the smaller ones may be commenced and continued at any period of the year.

FINIS.

